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ABSTRACT

This report summarizes the results of research conducted by a research group at Virginia Polytechnic Institute and State University which examined the current status of computer networking in K-12 education, including ways in which network linkages are impacting educational tasks. Conducted for EDUCOM and IBM Corporation, the fact-finding project focused on current and planned network activities. The results are reported under three headings: (1) Student Activities (provides examples of the impact of telecommunications on the educational experiences of children); (2) States' Educational Computer Networks (describes statewide and intrastate networks, networking projects that support a specific function, and proposed networks); (3) Public Access Networks and Databases (focuses on the wide variety of services offered nationwide by such agencies as non-profit organizations, private corporations, universities, and the federal government). It is noted that the research led to a number of observations: the proliferation of computers in secondary schools has created an increased interest with linking to resources at all educational levels; there is no doubt that telecommunications activities provide useful educational experiences; a telecommunications network that fosters an exchange of ideas among educators and allows students greater access to academic data at universities is inevitable; and, given the fragmentations of the current networking environment, an avenue is needed for interested parties to coordinate their activities. A summary of network features and lists of contact persons and major references are appended. An index and an extensive bibliography are also provided. (ALF)

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A Survey of Educational Computer Networks

June 1990

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Thomas R. McAnge, Jr.
Project Coordinator

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Introduction

Introduction

In January 1990, EDUCOM and IBM Corporation undertook a fact-finding project to examine the current status of computer networking in K-12 education, including ways in which network linkages are impacting educational tasks. The project originated with Ken King, President of EDUCOM; Sam Matsa, University Relations, IBM; Robert Heterick, Vice President, Information Systems, Virginia Polytechnic Institute and State University; and Gary Augustson, Executive Director, Computer and Information Systems, Pennsylvania State University, all of whom share the vision and commitment to foster a global community by electronically linking university faculty, K-12 educators, and students at all educational levels.

The fact-finding project of current and planned network activities was conducted by a research group at Virginia Polytechnic Institute and State University. This document summarizes and reports the results of that research under the following sections.

Student Activities. Several examples of the impact of telecommunications on the educational experiences of children are documented in this section. The reader can't help but share the enthusiasm generated by these activities.

States' Educational Computer Networks. This section contains the bulk of the research findings which are grouped into four categories. Statewide Networks refers to networks in which nearly every school in the state is connected; Intrastate Networks refers to those networks that are available to every school or school district in the state and the option of connection rests with the school or school district; Networking Projects refers to those networks that exist to support a specific function, i.e., first-year teacher support, science classes, or those that now function as a pilot project within the state; and, finally, Proposed Networks refers to networks that are still in the planning stages or are not yet fully operational.

Public Access Networks and Databases. This section is devoted to the wide variety of networks and databases available to supplement the educational needs of K-12 nationwide. These services are offered by many types of agencies, including non-profit organizations, private corporations, universities, and the federal government.

The objective of this study was to gather information and report current networking activities. The process, more so than the findings, led to a number of observations. First, the proliferation of computers in secondary schools has created an increased interest with linking to resources at all educational levels. Second, there is no doubt that telecommunications activities provide useful educational experiences. Thus, a telecommunications network that fosters an exchange of ideas among educators and allows students greater access to academic data, located at universities, is inevitable. Finally, it is also apparent that, given the fragmentation of the current networking environment, an avenue is needed for interested parties to coordinate their activities.

Student Activities

Walpole, Massachusetts

"Why are there fewer pets in a certain small Louisiana town than there are in Walpole, Massachusetts? Mrs. Griffith's fourth grade class sits in deep thought. They had already gathered the data, talked about classifying it, and through their telecommunications network, compared the findings with their Louisiana counterparts.

"Hands soon shot up. One thinks the difference has to do with climate. Another that parental attitudes are more restrictive. Still another thinks the Louisiana town might be poorer. 'I know,' shouts Joshua, a student classified learning disabled. 'I bet it has nothing at all to do with that stuff. I bet that school is in a place where there's government housing, and that the kids can't have any pets.'

"Mrs. Griffith and the rest of the class seem stunned. Not only had no one thought of this as a possible (and plausible) explanation, but no one had expected Joshua to think of it.

"The students got busy. At Joshua's lead, they contacted their Louisiana counterparts, and much to everyone's amazement, discovered that Joshua had been right. The Louisiana town does have a large proportion of its population housed in government housing, and yes, there are very explicit restrictions against owning pets.

"No one looks at Joshua the same way anymore. Especially Joshua. Buoyed by his success, he begins assuming a more assertive role in his small team."[1]

---

[1] Bruce Goldberg, "Restructuring and Technology: Part One," Radius, October/ November 1988, p. 3.

Lincoln, Nebraska

Kids in the Lincoln, Nebraska, School District set up the Kids' Travel Agency as part of a summer school project. Using CMS School-Net, a survey was sent only to kids, requesting information such as their favorite restaurants, motels, and historical attractions. Several classes from San Diego, California, responded. These students were excited with the idea of being able to tell 'land-bound' students about Sea World, the Pacific Ocean, and Disneyland. The Lincoln students eagerly read, edited, and processed the data, then developed information packets from a kid's perspective for each area surveyed.

Juneau, Alaska

In the Fall of 1989, ninth grade teachers and students from Juneau, Alaska, and Moscow, USSR, communicated over a seven-day period in a joint project known as World 2000. E-mail and computer conferencing were the vehicles by which the students discussed global health issues and their vision of world health in the year 2000. Their research results are to be published. The participants hope to continue this project each year.

Binghamton, New York

"The research was really important because it helped us ask intelligent questions,"[2] said one student. Another said, "It has made school really special for me these past few weeks. I still get excited when I think about it."[3]

---

[2] U.S. Congressional Office of Technology Assessment. Linking for Learning: A New Course for Education. November, 1989, p. 9.

[3] Ibid., p. 9.

These comments were made by students in the Chenango/Delaware area of New York about a telecommunications project called the "Electronic Field Trip". The Electronic Field Trip is an inexpensive way to put students in isolated areas in contact with professionals in a variety of fields. Field trips included "visits" to the local mayor, activists, steelmill workers, international students in Australia, Alaska, and England, and musicians.

One electronic field trip was scheduled with a rock musician. Only those students interested enough to do background research were allowed to participate. The school's music teacher, telecommunications coordinator, and librarian guided the research. After two weeks of preparation, an enthusiastic audience of eight students, a mix of aspiring musicians, college-bound students, and kids with no stated future plans, communicated for over an hour.

Afterward, the students proudly talked about the project. One commented, "We would like to talk to another musician who has not made it big and compare the interviews." [4] Another student regretted the lack of reporting from the local paper. "If this had been a local football game, they would have given it two columns of reporting."[5]

The students' hard work paid off in many ways. They learned how to organize their thoughts on paper and on their feet, how to work together as a team, and how to plan; and, they learned more about a career to which some of them aspire.

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[4] U.S. Congressional Office of Technology Assessment. Linking for Learning: A New Course for Education, November, 1989, p. 9.

[5] Ibid., p. 9.

Dublin, Ireland

As an extracurricular activity, students in the Dalkey School Project in the suburbs of Dublin, Ireland, found pen-pals in the United States and Canada. Initially, the objectives were to share student writing and learn a little more about other cultures. This pen-pal project has opened up a new world to these students.

From the Kidsnet distribution list, contacts were made with other children from several locations in the U.S., including Aurora, Colorado; Charlottesville, Virginia; Franklinville, New York; and Tallahassee, Florida; and from British Columbia, Canada. Students' tele-letters often contained information about themselves, their families, schools, and neighborhoods.

The students have begun to understand the nature and operation of the network, and have become very interested in people in distant places and how they live, primarily because they have been able to make friends so easily over the network. The students' keyboarding, editing, and word-processing skills have also improved.

On March 24, 1990, the Dublin Computer Fair opened featuring exhibits from computer students in dozens of schools in the Dublin area. The Dalkey School Project group went online during the fair to send and receive messages from the Dublin area and worldwide, and to demonstrate to students, teachers, administrators, and a few government officials the educational benefits and fun of telecommunications.

Next year, the students hope to enter the 1991 Aer Lingus Young Scientists' Exhibition.

Toronto, Canada

"What a wonderful learning experience it has been. It has given me a new perspective on learning and learning how to learn. With other writers of the world, we have all responded and contributed to one another. I see this as something that has changed my life. Education shouldn't always be within classroom walls."[6]

This is what one 12th grade student wrote about her English class after telecommunications technology projects had been introduced into the curriculum. Students, teachers, and writers throughout Canada, the U.S., and the world correspond and the students' work is critiqued by the professionals. The "Writers in Electronic Residence" program of the Riverdale Collegiate Institute in Toronto is supported by the College of Education at Simon Fraser University, and forms the basis of these language-based studies.

Students' works, primarily poetry and short fiction, are posted in an electronic conference area established for their use. The students are in control of the media before them and use them to broaden their classroom experiences. The "Electro-Poets" project involved a class in Toronto, one in British Columbia, and a poet also in British Columbia. During this four-month project, over 200 pages of original writing and comments were generated by the students. They readily accepted the telecommunications activities as part of their daily classroom activity. Another project, "New-Voices", involved a poet, a science-fiction writer, and a short-fiction author, and schools in Ontario and British Columbia. A third project, "Wired Writer", connects ten schools and one author from a past project.

These language-based telecommunications projects inspired students to develop language appropriate to the activity, and offered direct and personal access to computer activities that are relevant today. These telecommunications projects increased the students' access to the world and, as a result, brought to the classroom experiences to meet and enhance existing curricular needs.

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[6] DISTED Electronic Journal, March 1990, pp. 5-6.

Middlebury, Vermont

Earth Day 1990 (April 22) was the culmination of an eight-week project by children in classrooms from South America, Europe, Asia, and North America. The "World Class" project was sponsored by BreadNet, the network of the Bread Loaf School of English at Middlebury College in Vermont, in conjunction with Iris, MECC's online network of teachers, and Campus 2000, British Telecomm's educational network.

This year's topic was global warming. The common curriculum was based on Time's "Planet of the Year" issue. The students exchanged ideas and proposed solutions to environmental issues. They had the opportunity to pose questions to environmental leaders and politicians, and share their opinions and reactions to these issues. Senator Al Gore, of Tennessee, was available as this year's guest speaker to interact with teachers and their classes.

The project, called World Class [1990], opened officially March 4th of this year. While the results of this project are not yet available, it is expected that it will prove to be a larger collaborative project than the previous year's.

The December 1988 National Geographic article on Brazil's rain forests served as the topic for World Class [1989]. The discussions generated astounding results: students in an Eastern Kentucky coal-mining area compared their situation with that in Brazil; students in New York contributed more sources of information than an environmental group could generate; a Washington professional suggested debt-for-nature swaps; and, finally, student essays from Chile summarized the ideas as part of an international essay exchange.

Roxboro, North Carolina

A Global Grocery List has been posted on FrEdMail's IDEAS bulletin board by the Person County Schools in North Carolina. Students ask for the local price in local currency of specific quantities of 14 items. To date, students from Michigan, Illinois, California, North Carolina, and England have responded.

The Person County School students expect to use the data in other classroom projects including math, social studies, and science to study economics in the marketplace. Data are periodically compiled and posted to the IDEAS bulletin board for other classes who may wish to access the information.

Alconbury, England

Peanut Butter and JAM -- food for thought. JAM (Junior Atlantic Monthly) is one of several future on-line projects of the Department of Defense Dependents Schools (DoDDS) Stars and Stripes Bulletin Board System at Alconbury Elementary School. JAM, a student-generated magazine, will contain classroom-written work from students in grades four through six. A special kindergarten through third grade section, called Peanut Butter, is being planned.

The magazine will include all sorts of creative writing, including short stories, poetry, essays, and interviews. A schedule of topics for each issue will be posted on the bulletin board, as JAM hopes to integrate with current classroom curriculum. Submissions will be uploaded to a special area on the bulletin board and editing will be performed by editorial groups, located at various schools, as part of their language arts curriculum. Rejected articles will be returned to the author with comments or explanations. Final works will be uploaded to the bulletin board for publication and distribution.

Tallahassee, Florida

Learning disabled students at Rickards High School now have a bulletin board message area they can call their own. Knowing the educational value of being able to communicate with others around the world, the Leon County Schools in Tallahassee, Florida, established an electronic bulletin board at Rickards High School, available to those in the Tallahassee area with a computer and a modem.

Among others, the Special Students message area is designed for learning disabled students. Initially, their communication is limited to other Rickards High School students, as an intermediate step for those overwhelmed by the variety of message areas. Reading and writing skills are reinforced as messages are exchanged. Deaf and blind students have joined the fun through the use of adaptive devices on their computers.

When these students are ready to advance, they may join several projects which were developed for the bulletin board, including Alien Visit - where a teacher, parent, or other adult logs on and poses as an alien, asking questions on various topics; writing their own surveys and collecting data; writing and reading messages in foreign languages; establishing a county-wide magazine by and for students about their school's activities; and the on-line serial novel - - where one class composes a section and posts it on the bulletin board for another class to continue.

Barriers of academic ability have broken down and a challenging and motivating curriculum has been provided for students, thanks to the foresight of the administrators in the Leon County School System.

States' Educational Computer Networks

Alaska

UACN

University of Alaska
Computer Network

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Director of Computing
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UACN
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Fairbanks, AK 99775-5180
907/474-6280

UACN is a statewide system linking all parts of the university with each other and national/regional networks by satellite and landline communication facilities. Its purpose is to serve the computer and communications needs of the students, faculty, staff, and administration of the University of Alaska. The university portion of the network has 13 sites, including ten colleges. Each of the state's 56 school districts has access to UACN.

UACN uses a circuit-switched statewide computer data network to link to host computers within the university system. It is operated by university staff and is available as a free resource to all University of Alaska students, faculty, and staff.

Approximately one-third of the messages sent on UACN require satellite transmission. Networks available through UACN include Alaska Teleconferencing Network (ATN, also operated by the University of Alaska), BITNET, NSFNET, State of Alaska IRM, NorthWestNet, and AlaskaNet (Tymnet). AlaskaNet is a statewide computer data network operated by Alascom providing data links to both public and private host computer services within the state and data links to other networks and services outside the state. In addition, the State's Department of Administration operates the State of Alaska Computer Network, consisting of interconnected IBM mainframe computers, which are also interconnected with the UACN IBM mainframe via a statewide SNA data communications network. Users of either system are able to access the resources of the other.

Arizona

AZ EdLink

Department of Education Network

Contact:
John Cikelo
1900 West Thomas Avenue
Phoenix, AZ 85015
602/255-5061

AZ EdLink provides bulletin board services to Arizona educators. For an $80 cost recovery fee to Leids Communication, Ltd. (the software provider), AZ EdLink subscribers can use e-mail and access outside databases and FrEdMail services.

Florida

FIRN

Florida Information
Resource Network

Contact:
Bill Schmid
Director of FIRN
Florida Educational Center
Tallahassee, FL 32399
904/487-0911

FIRN appears to be the most advanced educational data communications network in the nation. FIRN links all state universities, community colleges, and public schools to a comprehensive data communications network which serves as the Department of Education's primary data communications facility, providing interconnectivity between all of these educational agencies. Data communications equipment, located throughout the state, connect all school districts and area vocational/technical centers, 28 community colleges, and nine state universities into the FIRN network. Students and faculty have access to unique computing capabilities available on other campuses, administrators in the more remote districts, and colleges can use the computer resources of more sophisticated districts and institutions. FIRN also supports a statewide automated library search system called LUIS (Library User Information Service).

Two physically distinct data communications networks comprise FIRN. One is based on IBM's System Network Architecture (SNA) and the other on Tymnet's networking system, sometimes called an X.25 network. FIRN/SNA is a multiple-domain multiple-subnet SNA network with over 30 host nodes, and over 40 minicomputers connected as nodes. FIRN/TYMNET is a packet-switching network using FIRN-owned Tymnet communications processors to provide interconnectivity for ASCII terminals and hosts. Gateways and bridges between the two networks allow users connected to one network to reach systems attached to the other. The Tymnet side is a state-owned private network with access into Tymnet's international public data network.

The majority of use is devoted to administrators, followed by students at all educational levels. Future plans include allowing public school students to communicate with their peers through the use of the written "electronic" word for the purpose of expanding their language arts skills.

Georgia

University of Georgia College of Education Bulletin Board

Contact:
James Aberson
232 Aderhold Hall
University of Georgia
Athens, Georgia 30602
404/542-8824

This statewide bulletin board system offers services to administrators, educators, and students at all educational levels. It provides long distance educational and administrative support through conferences and e-mail on any educational topic, including technology. The dial-in system uses RBBS software.

Indiana

IDEAnet

Indiana Department of
Education Access Network

Contact:
Mike Huffman, Director
Educational Information
System
State House
Indianapolis, IN 46204-2798
317/232-0808

IDEAnet (Indiana Department of Education Access Network) is a Department of Education database, bulletin board, conferencing, and professional employment referral system. All educators have access to these services, and a database which provides testing, demographic, and other relevant administrative information. There is no charge for this service.

Indiana

INTELENET

INdiana
TELEcommunications
NETwork

Contact:
Mark Commons
Executive Director
INTELENET Commission
17 West Market Street
Indianapolis, IN
46204-2929
317/685-8990

INTELENET is a statewide fiber-optic network, managed by the Intelenet Commission and built by GTE. The network is designed to provide telecommunications services to state, county, and municipal government offices, and primary, secondary, vocational, and higher education institutions in Indiana. Each of these agencies has its own network and now they have access to the statewide backbone. INTELENET serves concentrated sites in Indiana where customers will access the network for transport and switching of voice, video, and data services, and obtain other value-added information services. GTE built the network and the Intelenet Commission leases it.

INTELENET customers include state governments, Indiana University Computer network, and the Indiana Higher Education Telecommunication System (IHETS). IHETS, a consortium of public and private universities and colleges, provides closed circuit educational television services, and telephone networking services.

Maryland

METNET

Maryland Education
Technology Network

Contact:
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Technology
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Owings Mills, MD 21117
301/581-4350

METNET is a telecommunications network sponsored by the State Department of Education for the institutions of higher education and K-12 schools to share information and ideas. METNET uses Learning Link as a platform and allows Maryland educators access to all services Learning Link provides, including special forums, interest groups, special programs, and the ability to communicate with educators nationwide. It's bulletin board service uses a unix-based MS-DOS system. Educators across the state can access the system through toll-free telephone lines. Although there is no direct student use on the system, teachers upload and download student writing projects in a special program called, "Writing Across the Curricula".

Montana

Big Sky Telegraph

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Frank Odasz
Big Sky Telegraph
Western Montana College
Dillon, MT 59725
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Big Sky Telegraph (BST) is a grassroots telecommunications system linking Montana's rural schools with resources and other rural teachers region-wide. BST offers e-mail, conferencing, educational databases, library services, free ERIC searching, copyrighted software loan library, and on-line training classes. It was founded by Frank Odasz and Regina Odasz, both education professors at Western Montana College, with grants from U. S. West and the M. J. Murdock Charitable Trust.

On January 1, 1988, BST went online to offer telecommunications remotely to Montana school teachers in 114 one-room schools via existing microcomputers in the schools, with the addition of a grant-provided modem. Access is free to all interested in rural education and rural community support. Users come from all across Montana. In addition, 15 states use it for economic development, and both county and city governments use it to access data. University faculty use BST as a collaborative with elementary and secondary school teachers. Courses are also being taught out of Western Montana College for college credit. The newest on-line service supports the health-care industry.

BST is an Intel 386-based machine running XENIX. The conferencing software is a version of a customized XXBS bulletin board program. BST also runs on the Foxbase database program. A Compaq machine was installed which runs MS-DOS.

New Mexico

Technet

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Technet was formed to encourage economic development by promoting the use of the vast amounts of information generated by the state's national laboratories, universities, and government offices. The not-for-profit computer network links research laboratories, universities, government agencies, and private businesses, allowing a wide range of users access to nearly 1,000 computers, including Cray-class supercomputers. World-class research and development institutions, stretching along the Rio Grande Research Corridor from Los Alamos National Laboratory southward 340 miles to Las Cruces and the White Sands Missile Range, are linked via fiber optics. This fiber-optic cable, installed by U. S. West, serves as Technet's communications backbone along this corridor.

In addition to the corridor's fiber system, Technet reaches every corner of the state via normal phone lines and computer modems. State offices, private businesses, and schools now subscribe to Technet services. An NSF grant allowed Technet to link the University of New Mexico, New Mexico State University, and the New Mexico Institute of Mining and Technology to Westnet. Westnet further connects universities in Arizona, Utah, Idaho, Colorado, and Wyoming to colleges and supercomputer centers throughout the nation. The University of New Mexico supports a large number of secondary schools by providing access to its LAN.

Technet offers several public service programs, including a statewide educators' electronic network called NEDCOMM, an acronym for New Mexico Network for Educational Communications. Sponsored by the University of New Mexico and U. S. West, NEDCOMM offers e-mail and facilitates administrative reporting and idea and course plan exchanges through computer conferencing, bulletin boards, and statewide databases. Access to consultants at educational institutions is also provided to network users. Public school students use NEDCOMM to access information at the University of New Mexico and the UNM general and medical school libraries.

New York

Teacher Resource Centers' Electronic Network

Contact:
Helen Hartle
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New York State Education Department
Empire State Plaza
Albany, NY 12230
518/473-1234

The Teacher Resource Centers are professional development centers organized and operated by teachers across the state. The focus is on technology and the effective utilization of computers, video discs, and other technology in the classroom. Through the use of the Teacher Center Electronic Network and its bulletin board, e-mail services, satellite broadcasts, information services, and databases, teachers share ideas and support one another in developing materials, collaborating on research, and helping less-experienced teachers gain technological confidence.

The mainframe is located at the New York Institute of Technology. The conferencing software used is COsy. Future plans are to connect to the statewide TNT network.

New York

TNT

Technology Network Ties

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Director
New York State Education
Department
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Secondary Educational
Planning
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TNT is a comprehensive, statewide network linking school districts, BOCES, libraries, and other educational agencies with the New York State Department of Education. The TNT system is designed for use at all educational levels and features PROFS, e-mail, conferencing using COsy, regional conferences, programs that address specific topic areas, and electronic clearinghouses of information about resources, funding, and research.

The backbone infrastructure has been in place since Spring 1988. It links all of the BOCES, many school districts within each Regional Information Center, and the New York City Regional Information Center with the State Education Department. In some districts, all school buildings are linked, including the City of Buffalo and two New York City Community School Districts.

The Telecom5 Educational Network has continued planning for delivery of integrated network services to 77 school districts in five Southern Tier BOCES areas. The future for TNT includes a comprehensive student information system, increased curriculum-based computer conferencing, and financial applications for education management, instructional applications, management, and support.

North Carolina

WCU MicroNet

Western Carolina
University MicroNet

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WCU MicroNet has been operational since 1982, serving schools across the State of North Carolina by providing access to the WCU MicroNet telecommunications system through a toll-free number. Students and teachers can link with each other, the WCU faculty and staff, and with resource agencies, such as AT&T, Bell Labs, University of North Carolina at various campuses, and Morehead Planetarium. Network services include e-mail, conferencing, databases of class activities, on-line quiz programs, access to the university libraries, etc. Users include pre-college and K-12 students for science, mathematics, foreign languages, English, and history classes.

North Dakota

ND HECN

North Dakota Higher
Education Computer
Network

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The State of North Dakota has a statewide computer network that links the State Department of Education, state agencies, eleven colleges and universities, and supports a statewide library system of public, private, and state libraries. It is a hub-and-spoke network that consists of 13 nodes in 13 cities, nine of which have routing capabilities. All state government departments share the same backbone with higher education. State agencies use the system to access a database of human services information. The system at the University of North Dakota supports the administrative functions of higher education, while the North Dakota State University system supports the academic and research demands of higher education.

ND HECN runs on the North Dakota Information Network, the IBM system backbone. Maintenance and funding are shared. Ownership is 50% state and 50% shared between North Dakota State University and the University of North Dakota.

Distance Learning North Dakota is a proposal to link K-12 and local governments into the T1 backbone. DLND is actually two networks. The first is a video network to connect schools within eight regions across the state. Grants will be given to regional areas which will implement networks to meet their delivery needs. These regional networks will later hook into the backbone for additional services. The second is a comprehensive statewide network for use by students, faculty, and administrators in K-12, as well as college extension, GED, and Native Americans. DLND will support voice, video, and data transmission. K-12 and local government offices are expected to be linked to the T1 backbone by Fall 1990.

Ohio

Ohio Education Computer Network

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Ohio Department of
Education
Division of Computer
Services
180 East Engler Street
Columbus, OH 43266-0552
614/466-7000

The Ohio Education Computer Network, which links over 80% of Ohio's school districts, is a state-owned microwave communications network. E-mail and data are shared among network users.

Pennsylvania

PENN*LINK

Department of Education
Computer Network

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PENN*LINK is the official electronic communications network for the Pennsylvania Department of Education (PDE). Established in November 1986, it provides e-mail service to school districts, school superintendents, intermediate units, and area vocational and technical schools (AVTS). An electronic bulletin board provides users with information on a range of topics, including news, legislative updates, fiscal notices, announcements, policies, meeting calendars, lists of publications, and directories.

Penn State's Cooperative Extension Service operates the communications network. The computer host is located at the Pennsylvania State University.

South Carolina

CUFAN

Clemson's Forestry and Agriculture Network

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Clemson University has established a statewide data communications system to provide service to the South Carolina Cooperative Extension Service Offices located in each county. The network is composed of four major nodes linked by 19.2-kbps lines and 9.6-kbps lines to the other 47 locations. The host computer is a VAX located at Clemson University. Schools in South Carolina access CUFAN with a local telephone call to the communications equipment located in the county Extension offices. Cufan is the communications portion of the statewide telecommunications network, Pathways, which is operated by the Department of Education for the transfer of administrative information.

Texas

TEA-NET

Texas Education Agency
Network

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From the Fall of 1985 to the Spring of 1987, the Texas Education Agency (TEA) contracted with the National Information System to conduct a pilot program to study the effectiveness of electronic communications between agency school districts and one regional educational service center. One service center and 14 school districts (a total of 48 sites) used the 'Electric Pages', an electronic network service, to communicate with TEA and other educational and professional entities via bulletin board services, e-mail, and teleconferencing. The results of this project indicated that a statewide telecommunications network can support information exchange for administrative uses, plus provide supplemental course instruction. In January 1986, TEA established a network on the 'Electric Pages' called TEA-NET.

The vision for TEA-NET is to become a network whereby teachers, school districts, administrators, TEA, regional service centers, colleges, universities, and other educational and state agencies can communicate electronically. The agency computer network will support multiple phone-line use, multiple operating systems, standard communications software, e-mail, bulletin board systems, conferencing systems, different baud rates, and a transparent interface. Batch capabilities will provide access to other states and national information providers. Since 1985, this network service has been provided by GTE. Currently, two-thirds of the school districts are connected. A contract is to be awarded for conferencing and database access services in the Fall of 1990.

In addition, the Beginning Teacher Induction Plan (BTIP) is expected to be implemented statewide on TEA-NET during the 1992-93 school year. This pilot program is designed to improve the performance of beginning teachers in their first year of teaching by maximizing the use of existing computerized telecommunications systems that link teachers, school districts, colleges, and universities, service centers, and teacher centers.

West Virginia

Administrative Network

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The West Virginia Administrative Network is a closed system that provides educational administrative information directly from state superintendents to local county superintendents at local education agencies. The administrative network is accessed through three dial-in lines and provides e-mail, bulletin boards, and financial updates.

Colorado

UNC Telecommunications System

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The Western Institute for Distance Education (WIDE) is an assessment, development, and evaluation center, administered by the University of Northern Colorado's (UNC's) Division of Continuing Education to support its mission to deliver graduate teacher education programs statewide. It is primarily available to assist UNC staff, faculty, and students with statewide graduate teacher education endeavors. WIDE provides technical and instructional support to develop, produce, and evaluate distance education activities, serves as a facility to design and develop instructional materials, and manages the UNC Telecommunications System, the vehicle by which its graduate teacher education program is achieved.

The UNC Telecommunications System provides for the development of "Community Campus Centers" located in partnership at post-secondary institutions at sites across the state. Centers are interactively linked to each other and the UNC campus in Greeley by a telecommunications system, which carries data, voice, and compressed video signals over copper telephone wire. Each center will provide access to student information, library, computer and advising facilities, collegiate amenities, a telecommunications link to the UNC campus, U. S. West, the Colorado Department of Education, other post-secondary institutions, Colorado Alliance of Research Libraries (CARL), and SUPERNET. K-12 institutions are to be linked in the future. The system employs T-1 telephone technology to transport interactive, two-way compressed video, voice, and data on a dedicated network. Five sites are currently linked and as many as 15 will be linked in the future.

Delaware

Statewide Telecommunications Network

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The Statewide Telecommunications Network is a dial-up system that consists of three major computers. Any school district, state agency, or university may access the system after purchasing time-sharing services. Funding is subsidized by the state with 50% of the costs covered by user fees.

One computer supports the administrative computing needs of the state. One-third of the state's school districts access the State Department of Education's central Vax computer to transfer administrative information and student records and to access database packages, statistical packages, and utilities, which are available for use by school administrators and teachers.

A bulletin board currently provides conferencing facilities and e-mail services to users. The state is negotiating with MECC (Minnesota Educational Computer Corporation) to have the bulletin board service become an Iris node.

Georgia

GC EduNET

Georgia College Educators' Network

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In 1987, Georgia College was awarded a continuous grant from special initiative funds by the Georgia State Legislature to improve teacher education in the middle Georgia area. This led to the development of the Regional Teacher Education Center (RTEC). RTEC funded the GC EduNET project, which was designed to provide electronic conferencing, e-mail, file sharing, on-line database searching, and other communications activities to educators and educational administrators in the State of Georgia.

The primary server is a Macintosh II with 100-Mb disk storage capability. Both internal and external access to GC EduNET is managed by AppleShare protocols, plus software developed by Russ Systems of Santa Cruz, California. The service is available free to all schools in Georgia College's primary service area and at low cost to others in the state. Participating schools are provided telecommunications software and a 2400-baud modem for an Apple IIe or IIgs.

GC EduNET went online October 1, 1988. There are 212 members authorized for remote access to GC EduNET. During the first months of operation, there were 1,935 calls from remote sites, totaling 291 hours of connect time. In the future, it is hoped that every school in the state will be a member of the network.

Illinois

Electronic Educational Service Centers

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The State of Illinois has 18 educational service centers (ESC's) that serve the school districts within their respective regions. Each ESC is linked electronically with the State Board of Education. The schools will be linked by way of a LAN and a dial-up process. Twenty-five schools have been added to the network, with more to follow. Users access the system for e-mail, file transfer, information retrieval, and to set up workshops. A bulletin board system will be established with the State Department of Education. There is no student participation.

Iowa

Interactive Computer Conferencing and Electronic Distribution System

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The University of Northern Iowa, with funding from the State of Iowa, is organizing educators throughout the state in an Interactive Computer Conferencing and Electronic Information Distribution System. This network connects elementary through post-secondary teachers around the state via computer conferencing to coordinate policy and administrative affairs related to student teaching. Users can also access the ERIC CD ROM database for searches. By September 1990, this system should be in place and operational. This network will become a part of the statewide network ICN (Iowa Communications Network).

Several pilot projects are under way. In Waterloo and Council Bluffs, Iowa, student teachers are able to access their supervisors and peers, as well as resources at other universities around the state. A third project links first-year teachers with university faculty for computer conferencing.

CAUCUS software, running on an IBM PS/2 Model 80 with a Xenix operating system, is connected to the host side of a Gandalf Starmaster dataswitch. A combination of toll-free phone lines, local lines, on-campus terminals, and directly connected PC's complete the network.

Iowa

Kirkwood Community College Network

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Kirkwood Community College has five fully interactive educational networks. Telelink is a microwave-based two-way audio, two-way video network that connects the main campus with students in its 4300 square-mile, seven-county service area for coursework toward a two-year degree. A secondary school network connects 23 K-12 school districts to provide shared high school programs and college credit courses through the use of ITFS. In addition, the Business Industrial Training Network (Bitnet) uses ITFS to provide on-site training to selected businesses and industries. Urban Network is used by the Cedar Rapids School District to link schools for in-service teacher training and classes at the high school level. A full-service cable network serves 17 communities and 70,000 homes. Finally, a public radio service is provided over a seven-county area.

Additional community college networks have sprung up, based upon Kirkwood's success. The other regional network systems are Iowa Lakes Community College at Estherville and Iowa Central Community College at Fort Dodge. Systems are being built at the Southeast Community College in Creston, and in 1991, at the Hawkeye Institute of Technology at Waterloo. All of these regional networks are to be incorporated into the system backbone during Phase I of the ICN network.

Maine

ME-LINK

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ME-LINK is an electronic telecommunications network. It is part of a larger organization called the Maine Computer Consortium and is the medium through which members communicate. It is a dial-in e-mail and bulletin board system. Users include teachers and computer coordinators in the schools. Student use is typically short-term and project oriented.

Nebraska

Statewide Network

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K-12 teachers in the State of Nebraska can access the Iris Network to communicate with each other or to supplement their classroom teaching. Teachers get on the system in their classrooms and communicate with teachers and students in another classroom elsewhere on the network. While there is no individual student-to-student use, there is teacher-to-teacher classroom use. Student use is comprised of shared writing projects and science classes with other schools in the state or in the nation.

The state subscribes to and privately contracts for the Iris Network services. Nebraska educators have their own "conference area" on the Iris Network where they can interact with other state educators about issues of local interest. Currently, 100 Nebraska educators use this network. There is limited university participation from the University of Nebraska and Kearney State College, whose faculty members serve as resources.

The state is discussing implementing a statewide educational and state agency network to function as a separate intrastate telecomputing network.

New Jersey

Education Technology Network

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This telecommunications network features e-mail, discussion centers, forums, and databases. This is a data transfer telecommunications, bulletin board, and information retrieval service. Membership is open to anyone interested in education. Current membership has reached 3600 users and includes universities, teachers, administrators, board members, parents, and classrooms. Universities have held curriculum related and professional development forums and workshops on the network.

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West Virginia

WVMEN

West Virginia
Microcomputer Educational
Network

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WVMEN is an instructional network for all West Virginia residents. It offers community service postings, such as job openings for educators, grant information, calendars of events, Senate and House bills, and teleconference schedules. Teachers, students, parents, businesses, etc., access the system to use e-mail, bulletin boards, and download public domain software. Conference areas are available on the bulletin board for topic areas such as math, science, and debate.

44

Connecticut

SNET Links to Learning

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SNET, an acronym for the Southern New England Telecommunications Corporation, provides the telecommunications services used by Statenet and SNET Links to Learning. SNET Links to Learning is an educational technology project which provides three types of telecommunications technology, including voice, video, and database acquisition to 34 schools within the state. SNET and the State Department of Education are partners in the SNET Links to Learning project.

SNET Links to Learning consists of three pilot projects, one of which provides 17 school districts the ability to link their schools through the public system, an X.25 packet switch network called Connet, into databases for news services and libraries. Participants include students and teachers in K-12 public schools. Several pen-pal projects have taken place. There is no university participation at this time.

Hawaii

ChemNet

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ChemNet is for chemistry teachers who are interested in learning and sharing ideas with other chemistry teachers. It is a cooperative venture among Hawaiian schools, the University of Hawaii Lab School, and the Hawaii Science Teachers' Association. Members from the Department of Education, Hawaii high schools, and the University of Hawaii meet via asynchronous telecommunications media, such as e-mail and bulletin boards, and through synchronous telecommunications media, such as telephone, slow-scan TV, or the Hawaii Interactive Television System (HITS).

Hawaii

TELEclass

The Hawaii Global
TELEclass Project

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The Hawaii Global TELEclass (Telecommunication Enriches Language Experiences) project began as a multi-level program to enhance the learning of foreign languages. By 1987, Hawaiian students in foreign language classes had linked with their counterparts in Japan, Korea, Taiwan, Hong Kong, People's Republic of China, Canada, Puerto Rico, Tahiti, Spain, France, and Germany.

TELEclass involves the use of a central computer to coordinate the project. In Hawaii, all schools are linked through the University of Hawaii's DEC20 computer mail and electronic bulletin board systems. The project has been facilitated by a partnership with Career Kokua, the Computerized Information Delivery System (CIDS) that has placed computer terminals and phone lines in every high school in Hawaii. TELEclass has expanded through the use of international computer networks. Electronic Information Exchange System (EIES) of the New Jersey Institute of Technology has been the main communications system.

Idaho

First Year Teacher Project

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In 1989, Boise State University began the First Year Teacher Project to support first-year teachers by providing the opportunity to maintain contact with university faculty and peers. This bulletin board service uses the Learning Link and all the services it provides as a foundation. In addition, the First Year Teacher Project was given a "corner" of the network for its own uses. No other Learning Link users can access the First Year Teacher Project, although First Year Teacher Project participants have access to all features of the Learning Link network.

The university selected 25 first-year public teachers within the state to participate in the project. The State Board of Education provides funding for the phone line needed for dial-in service. U. S. West, the local telephone company, provided funding for 25 Macintosh computers with modems, printers, and software.

Indiana

ESD

Electronic School District

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ESD, a model electronic school district, is an experimental computer network simulating academic and administrative functions in a school district. The ESD project is a cooperative effort among IBM, the Department of Education at Purdue University, Computing Services Department at Indiana University, Indiana State Department of Education, and several school districts in Indiana. Its purpose is to investigate the benefits to administrators, educators, and students of using a computer network to link school districts with the Indiana Department of Education and state universities to exchange ideas and information. Using an operating system called STEPS, Students and Teachers Electronic Productivity System, users can explore the educational and administrative possibilities of large-scale computer connectivity.

The ESD project began in July 1987, with an initial grant of $2.5 million in hardware and equipment maintenance from IBM, who continues to support the project with extensive training and other support. By October 1989, seven participating schools installed "electronic classrooms," each containing 20 or more microcomputers. The microcomputers are connected to a local area network (LAN) and the LANs are connected to the IBM 4381 mainframe at Indiana University in Bloomington. Using TCP/IP technology, the ESD will, in 1990, connect to Internet.

Kansas

UNITE

Unified Network for Informatics in Teacher Education

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UNITE is a computer network which establishes an environment to facilitate communication and exchange instructional computing resources among students, teachers, and administrators. With a grant from Apple Corporation, faculty and students in the School of Education at the University of Kansas use Macintosh computers to develop educational resources for educators. Instructional development and on-line resources are developed for administrators, teachers, and educators in six school districts. This development takes place in the Educational Informatics Hub, located in the School of Education's Instructional Technology Center, a local area network that connects 16 schools through a bulletin board service.

Future plans include connecting all public schools and educational resources nationwide to foster communication and collaboration.

Massachusetts

The Beginning Teacher Computer Network

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The Beginning Teacher Computer Network is a teacher-link program developed by Harvard University's Graduate School of Education to continue the training and support efforts of its teacher education programs. This network allows Harvard graduates to receive teaching advice by linking to veteran teachers and Harvard faculty via personal computers and telephone lines. Today, over 40 alumni from Virginia, Maryland, Illinois, Michigan, California, New York, New Hampshire, and Massachusetts participate in the network.

Common Ground, a bulletin board/computer conferencing software package, designed by the Educational Technology Center at Harvard, is used by the network's single host, an IBM XT with 640K ram and 20-mg hard disk. The host modem is a 1200-baud Hayes Smart Modem. All types of PC compatibles connect to the system, including Apples, IBM's, and Macintoshes.

Funding sources include a grant from the Mellon Foundation to cover telephone charges and a grant of 25 IBM PCs from IBM Corporation.

Massachusetts

SCHOLE

Boston University School of Education

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SCHOLE is a computer network designed, created, and operated by the School of Education at Boston University to teach children, assist teachers, aid researchers, and link students and scholars. It features e-mail, bulletin boards, teleconferencing, and special interest databases, including UPI News, encyclopedias, and an educational film library.

SCHOLE is committed to equal access for all societal segments. Since its beginning in March 1985, SCHOLE has served individuals and groups worldwide. Participants now include universities, public schools, teachers, researchers, families, children, professionals, and organizations.

Virginia

Teacher LINK

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Teacher LINK grew out of a simple e-mail project for teachers in local schools when the Curry School of Education at the University of Virginia decided to further investigate the impact of a computer network on the teaching process. Teacher LINK allows local educators access to users across the nation and worldwide via BITNET. This has encouraged teachers and interns to help their students communicate with teachers and students in many states, including Alaska, California, and Florida, and in other countries, such as Israel, Denmark, and Spain.

Major funding from IBM provided an IBM 4361 mainframe running the VM/IMS Operating System, 100 portable computers with built-in modems, monitors, printers, and software. The Curry School provided the support personnel. Grants from the university provided a networked classroom for participant workshops. ProComm and CAUCUS are the software used for this project.

Virginia

VT-HSNet

Virginia Tech K-12
Computer Network Project

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In February 1989, several school district representatives and staff from Virginia Tech met to discuss a pilot project to link secondary school teachers and students with university resources. Operating for one year, the pilot project currently involves 15 high schools, five universities, the State Department of Education, and other individuals. Participants at secondary schools are connected to Virginia Tech's IBM 3090 mainframe computer by dialing a local Virginia Education and Research Network (VERnet) node. Users have access to e-mail, the Virginia Tech Library, and other national resources via BITNET and Internet.

Arizona

Arizona Statewide Telecommunications Network

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The Arizona Education Telecommunications Cooperative (AETC) was formed in the summer of 1988 to provide a forum to share information about educational telecommunications activities and technologies. AETC includes representatives from public universities, community colleges, K-12 school systems, and the State Department of Administration. This group is seeking the implementation of a statewide computer network to serve the state's public education institutions, including K-12, community colleges, universities, academic and public libraries, as well as governmental agencies, non-profit community service groups, business and industry with instructional programming, video teleconferencing, file transfer, e-mail, bulletin board access, and access to information through on-line catalogs, library media services, and test banks.

The statewide network is expected to employ a mix of technologies, including satellite, microwave, ITFS, fiber optics, computer, telephone, and cable TV, to provide the needed statewide voice, video, and data services. This makes use of existing technologies and adds a satellite and a land-based infrastructure for full-broadcast video, compressed video, and high-speed data transmission. Full network development is expected to take several years.

Connecticut

Statenet

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Statenet is the vehicle for statewide public sector voice and data transmission. The fiber-optic and copper-wire backbone was built by Southern New England Telecommunications (SNET). All state voice, data, and video traffic will be moved onto the DS-3 backbone network by June 1992. It will be used by all state agencies, including the State Department of Education, and will support the transfer of administrative and student data.

The state network will include 336 miles of fiber optics, deployed in the public switched network. Traffic will be hubbed in 21 SNET central offices. The backbone will be based on a ring-mesh architecture that conforms to AT&T engineering standards for DS-0, T1, and DS-3 transmissions, as well as DACS standards.

Regional networks will connect Statenet and the metropolitan area networks (MetroNets). These regional networks will be targeted at areas that economically cannot be served by Statenet but that offer potential cost and service benefits in specific geographic areas. MetroNets will comprise the last leg of the network. One MetroNet, the University of Connecticut at Storrs, is implementing an advanced network based on an AT&T fiber-optic cable, and integrated services digital network technology. The system will include a fiber-optic network linked to a SNET central office that also acts as a Statenet node.

Georgia

GEIS

Georgia Educational
Information System

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GEIS is a statewide network operated by the State Department of Administrative Services. It is designed to connect all 186 school district offices, every school, library, and regional educational service to state offices. Forty-eight school district offices are connected. The remaining district offices should be connected in 1991. The entire network should be operational and every school connected by 1995. At the district level, the network will be used as a repository for all school information. Financial and student information will then be forwarded to state offices.

GEIS is an SNA network using T1 digital lines that are nearly in place statewide and multidrop lease lines to the schools and districts offices.

Illinois

Distance Learning Network

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The Distance Learning Network is a microwave, fiber-optic, ITFS, network with educational, business, and health care industry users. It offers two-way interactive audio, video, and data. Illinois Central Community College proposes to develop this telecommunications network to provide interactive instruction between the college and rural school districts.

The bulk of this telecommunications network is expected to be video based, but a data link is also proposed which will connect Illinois Central Community College with local schools for the transfer of administrative student data. Illinois Central College links with Bradley University to transfer administrative information via two-way microwave link. The purpose of this network is to provide additional curricula to those schools that are unable to do so because of costs or low enrollment.

A high school proposal exists to link school districts, including high schools and community colleges, in the Illinois Central Community College (ICCC) District. Over half of the school districts in the ICCC District have committed themselves to this network project. The Distance Learning Network is expected to be completed by Fall of 1991.

Iowa

ICN

Iowa Communications Network

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Based in part on the success of the Kirkwood Community College Network and various regional and local networks throughout the state, the Iowa State Legislature appropriated $50 million, $10 million per year over a five-year period, to build a statewide educational network to link every school, library, and state agency.

ICN will absorb the current ITN (Iowa Telecommunications Network), a cooperative project among state agencies, which handles administrative digital traffic. The T1 equipment is owned, and some of it is located in telephone company central offices.

ICN will be a multi-tiered system, which will embrace several levels of technology and will be developed in three phases. Phase I will establish a backbone system, which interactively connects the ICN system hub in Des Moines with 19 regional centers, including all 15 community colleges, the Iowa Department of Education, three universities, and the Iowa Public TV. Bids are currently due for a fiber-optic network that will serve as the telecommunications backbone for the voice and data transmissions. Each regional center will then act as a hub with responsibility for the nearly 2000 schools within its locality. Within each regional center, eight to 22 sites will be linked by two-way audio and video. All 19 regional centers will be able to broadcast by ITFS to its local sites. In the second phase, local systems will connect interactively within their regions. Phase 3 is for ITFS delivery. Administrative end users will be linked by the fiber-optic network and educational end users will rely on the ITFS to meet their informational needs. ICN will handle distance learning needs, teachers' meetings, continuing education, government-related data transmission, and town meetings.

Kentucky

KENS

Kentucky Educational
Networking System

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In April 1990, KENS received legislative approval and funding to link the State Department of Education and all levels of the state's 178 public school districts. KENS will be a computerized communications system, which will provide each school district equal access to available and easy-to-use instructional resources and support; expose students, teachers, and administrators of the state's public elementary and secondary schools to the effective application of modern technology; and, provide for the exchange of management performance data between the Kentucky Department of Education (KDE) and the local districts.

Each school district, approximately 1500 schools, will receive a minicomputer and enough remote terminals to serve each teacher, as well as some administrators. System usage is expected to be largely from teachers for instructional support in the form of curriculum information, lesson plans, and software reviews. Administrators at the schools or the local education agency central offices are also expected to be frequent users.

KENS will have the capacity to incorporate existing state-level hardware and applications, including the Kentucky Network for Educational Communication, the Vocational Education Networking System, various KDE in-house computer systems, and the state data systems. Communications with the KDE will be through SNA. All processing components will have the ability to participate on the SNA network. Transition from hierarchical to peer-to-peer network communications will be managed using SNA, LU 6.2. District level, peer-to-peer communications will be over ethernet technology. Communications from school to district office in the same educational district will be over T1 data lines and fiber-optic technologies, and communications between buildings located in the same geographic area will be over twisted pair wiring.

Maine

The Community College of Maine

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The Community College of Maine is the name of Maine's statewide distance learning network which uses fiber-optic cable, point-to-point microwave, ITFS and telephone lines to allow distance learners to participate in regular campus-based courses. The state's goal is to improve educational opportunities in the state and to reach older, part-time, and commuter students. In effect, telecommunications will create the community college system for the state. The plan calls for classes to be transmitted from electronic classrooms at seven university campuses to the university's off-campus centers, high schools, technical college campuses, and other locations statewide. Five hours of programming per day are devoted to high school students. All high schools are to be connected when the system is completed in 1993. The network is also available to government agencies and businesses for education and training purposes and for teleconferencing.

Seven campuses of the University of Maine system are currently connected by fiber optics. The technical colleges, Maine Maritime Academy, and 12 off-campus university centers currently receive ITFS programming and will eventually be connected to the fiber-optic backbone.

The technical specifications call for a fiber-optic spine linking the campuses, each of which will serve as a transmission site. Several off-campus centers will also have transmission capability when the system is complete. The fiber-optic spine will carry three channels of full duplex (two-way) video, audio, and data, with audio return. The University of Maine at Augusta will serve as both the hub of the terrestrial system and the site for satellites linkages. Dishes at all high schools, state and local government buildings, hospitals, businesses, and cable television systems will make live programming available to users across the state. Course materials and data can be distributed electronically between sites.

Minnesota

STARS

Statewide
Telecommunications
Access and Routing System

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The State of Minnesota has committed itself to STARS. During its 1989 session, the Minnesota Legislature gave its approval to develop a statewide broadband telecommunications transmission facility for voice, data, and video that will serve a large number of government agencies, educational institutions, etc. STARS will provide the opportunity to access existing local and regional networks through one common statewide facility.

STARS is in the conceptual stage of its development. As it is planned, STARS will lease facilities from telecommunications companies, who will own and operate the system. It will be publicly managed. Private providers will engineer, build, and maintain STARS.

Several local and regional networks exist throughout the State of Minnesota. State agencies, the University of Minnesota Systems, the State University System, local school districts, the courts, the Community College System, libraries, Minnesota Technical Colleges, and others, have custom-designed networking systems that are generally unable to communicate with each other. STARS seeks to increase the telecommunications capabilities of these offices, as well as provide the opportunity for them to interact.

New Hampshire

EDLINK

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Londonderry, NH 03053
603/432-6779

The Governor's Initiatives for Excellence in Education for the State of New Hampshire has funded a project to establish a statewide network for educators. Apple Computer, Inc., has agreed to help with network development. Funding has been approved for the project to operate into the 1991-1992 school year. EDLINK is being designed as a flexible information and communication utility that can adapt to operate as a LAN to serve individual unit needs, serve as a network for educators and administrators, and act as a resource link for teachers. Student participation is allowed only through special application. It is hoped that every school district in the state will participate.

The network will operate on AppleLink. Software needed to access the network will be provided free for the project. All standard AppleLink features, such as e-mail, file transfer, existing bulletin boards, and searchable databases will be available. EDLINK members will also have access to a special New Hampshire Educator's bulletin board that will contain folders of information of particular interest to special groups of the state's educators.

Oregon

Ed-Net

Integrated Statewide
Telecommunications
Network

Contact:
Dave Tilden
Office of Educational Policy
and Planning
225 Winter Street, NE
Salem, OR 97310
503/378-3921

The Ed-Net Committee, under the auspices of Governor Neil Goldschmidt, submitted a bill to the Oregon Legislature in May 1989 to establish a statewide telecommunications network with an estimated $8 million start-up cost. The Ed-Net design uses an existing telecommunications structure and adds satellite transmission of full-broadcast video, compressed video, and high-speed data. The Oregon Public Broadcasting (OPB) System has an extensive microwave network; thus, all sites can receive signals using existing antennas and hardware without interfering with OPB operations.

Ed-Net's technical capabilities have been divided into three networks. Networks I and II involve video transmission. Network III will transmit data only and will allow access to state offices, library information, e-mail, computer conferencing, electronic bulletin boards, databases, and libraries of software.

This model has succeeded in course delivery and professional development and has helped solve the lack of class offerings in the K-12 domain due to a rural teacher shortage.

Texas

SchooLINC

School Interactive Network
Consortium

Contact:
Linda Lloyd
Texas Association of School
Boards
P.O. Box 2947
Austin, TX 78768
512/467-0222

SchooLINC is a proposed research project to bring high technology into public schools using a very high bandwidth fiber-optic network to link schools in Dallas, Waco, Austin, and San Antonio, Texas. A telecommunications and technology infrastructure will link public schools, government, high-tech businesses, non-profit corporations, and higher education with a multi-technology, multi-purpose network. Classrooms will have the latest instructional technology options, including digital, two-way, full-motion, multipoint-interactive video, satellite programming, interactive videodisc, state-of-the-art computer workstations, and additional course-specific hardware and software.

The initial model involves an existing, wide-bandwidth fiber-optics network extending from Dallas, Texas, through Waco and San Antonio, with a planned link to Laredo, Texas. SchooLINC plans to expand this fiber network, link microwave and satellite into the network, bring a variety of new technologies into the public classroom, and determine ways in which to link the instructor with a world of instructional possibilities. The research project will address issues such as, "Can you teach a teacher to teach in an environment such as this?"

Project Bluebonnet, a consortium of businesses, corporations, and non-profit groups, including higher education, has contributed to the organization, funding, and management of the research and development agenda for this project. The goal of this group is to contribute to the economic independence and competitiveness of Texas through the appropriate use of advanced technologies. SchooLINC is the first endeavor of this consortium.

Public Access Networks and Databases

Educational Networks and Databases

Accu-Data

619 W. College Avenue
State College, PA 16801
814/238-0907
Contact: James Levin

This database service of Accu-Weather, includes information on surface observations, upper air data, National Weather Service hourly reports, forecasts, severe weather bulletins, and other geophysical and oceanographic products. Instructional materials are available.

AgEd Network and AgriData Network

AgriData Resources, Inc.
330 E. Kilbourn
Milwaukee, WI 53202
800/558-9044
Contact: Margie Dickmann

AgEd Network is an on-line informational database for agriculture and related departments in secondary, post-secondary, and other educational institutions. It contains instructional units and teaching units to help coordinate curriculum lessons. It provides current news, prices, and weather information. AgriData Network provides thousands of agricultural reports, including price quotes from the wheat and corn growers' associations.

BITNET

EDUCOM
1112 Sixteenth St., NW
Washington, DC 20036
202/872-4200
Contact: Mike Hrybyk

BITNET links universities, colleges, and research centers in the U.S. Members are connected in a single logical network, including over 1300 sites in 35 countries, for the exchange of non-commercial information. Gateways allow the exchange of e-mail between BITNET, Internet, CSNET, and USENET. It is directly linked to several networks outside the U.S., including EUnet, the European Network with at least one backbone site in 19 countries; Gulfnet, the Middle East segment connecting ten academic and research institutions in Kuwait and Saudi Arabia; and JANET, the Joint Academic Network, connecting all British universities and research organizations, and the British, Scottish, and Welsh National Libraries.

Classmate

Dialog Information
Services
3460 Hillview Avenue
Palo Alto, CA 94304
800/334-2564
Contact: Ann Caputo

This includes over 80 general interest full-text databases of journal, magazine, and newspaper articles, in a variety of fields, including general science, social studies, and the humanities. Middle school and high school teachers use this service to teach their students about on-line searching. The Classroom Instruction Program (CIP) offers the same services to college and graduate school students and educators. There is no subscription fee or monthly charge.

EdNET

Unison
Telecommunications
Service
700 West Pete Rose Way
Cincinnati, OH 45203
800/334-6122
Contact: Patricia Niehoff

EdNET is the Education Network on the UNISON network. In addition to the computer conferencing and e-mail features offered all UNISON subscribers, EdNET offers the tools for schools to build their own private electronic information and conferencing networks. Other services offered include financial, travel, and entertainment databases. A Mail System allows users to exchange e-mail with more than 25 on-line systems. An annual subscription fee, plus hourly access rates, is charged.

EIES - Electronic Information Exchange System

New Jersey Institute of
Technology
323 King Blvd.
Newark, NJ 07802
201/596-3574
Contact: Howard Kimmel

EIES (Electronic Information Exchange System) is an electronic resource-sharing network that features e-mail, conferencing notebooks, and tailored communications structured to meet users' needs. Linkages are achieved through microcomputers and phone lines. Begun in 1976, it is one of the oldest conferencing systems in the world. It was developed by the New Jersey Institute of Technology and Fairleigh Dickinson University as one component of an in-service educational model for science teachers designed to increase opportunities for teacher interaction and resource availability, improve teaching skills and qualifications, and improve the science curriculum. Today, the EIES system is used by educational institutions in other states, including Hawaii. Science students use the system to communicate with university faculty or students at other schools.

European Academic Research Network (EARN)

EARN Office
EHEI
45 Rue des Saints Peres
75006 Paris
France
+33 1 4015 0539
Contact: Alain Auroux
Auroux@frmop11.bitnet

This network is the European segment of the BITNET Network and links over 400 educational and research institutions in 18 countries. Cyprus, Egypt, India, Morocco, Tunisia, and Yugoslavia are expected to connect to EARN in the near future.

FrEdMail

FrEdMail Foundation
P.O. Box 243
Bonita, CA 92002-0243
619/475-4852
Contact: Al Rogers

The FrEdMail (Free Educational Mail) network is a product of the non-profit consortium, the FrEdMail Foundation. The FrEdMail network is an informal grassroots telecommunications network to help students and teachers exchange information. It consists of a collection of cooperating bulletin boards operated at universities, district educational offices, in individual schools, school offices, and classrooms, and in teachers' homes at 120 sites throughout the U.S. FrEdMail projects range from simple pen-pal projects to problem solving and includes several system-wide conferences. One, IDEAS, provides technical support, locates resources, and allows teachers to suggest project ideas. The second, KIDWIRE, posts students' work. A third, called BRIDGES, will allow disabled students to work with non-disabled students.

A new board, called ORILLAS, features a multi-lingual educational technology project/bulletin board dealing with language and culture. Partnerships are formed between elementary and secondary teachers in bi-lingual education and foreign languages, university professors and international students, and educators interested in cross-cultural learning.

FrEdMail's growth over the past year has been spectacular. Several new projects and boards are expected to begin in September 1990.

GTE Education Network

GTE Education Services, Inc.
8505 Freeport Parkway
Irving, TX 75063
800/634-5644
Contact: Customer Service

The single largest provider of on-line informational services to American education, this system is used by more than one-third of the schools in America. Included on this system are the General Education Network (previously known as ED-LINE), which provides information on educational issues, management, statistics, research, federal legislation, etc., through many databases; SpecialNet, designed by and for educators in the field of special education; Local Exchange, links government officials with local administrators and contains e-mail facilities, bulletin boards, databases, and more; Electric Pages provides the software and support to help national, regional, and local organizations run their own networks; News Access, supplies in-depth current events resources from CNN; SchooLINK, an annual, school-year-based project specializes in the science and social studies curricula and is run on SpecialNet; and Sci-Tech which runs on SchooLINK, provides current climate, geography, health and medicine, biology, ecology, and astronomy information to grades six through ten.

Iris

Metasystems Design Group (MDG), Inc.
Suite 103
2000 North 15th Street
Arlington, VA 22201
800/451-6549
Contact: Frank Burns

A network for teachers and schools, it is comprised of several centers: Welcome Center contains news, bulletins, and directions; Technology Center is for technical help about computer hardware and software; Teacher Center has on-line discussions, messages, and information sharing from colleagues; and Student Center provides student projects to be conducted online and concurrently in classrooms nationwide.

Kidsnet

6856 Eastern Avenue, NW
Washington, DC 20012
202/291-1400
Contact: Karen Jaffee

Kidsnet is a small, non-profit group that serves as a clearinghouse of information geared at children through the media. It maintains an off-line informational database on children's programs that are broadcast over cable, television, instructional television, etc. Schools, libraries, hospitals, etc., use this service.

Learning Initiatives International

Box 752
Georgia State University
Atlanta, GA 30303-3083
800/233-9233
Contact: Frances Atkinson

The Learning Initiatives International is an IBM-users' group dedicated to improving education in pre-K through 12, adult/adolescent literacy, basic skills, and non-collegiate business/vocational learning environments. Access to the Learning Initiatives Electronic conferencing network is achieved using PSInet. Membership and subscriber fees apply.

Learning Link (National)

356 West 58th St.
New York, NY 10019
212/560-6674
Contact: Bob Spielvogel

Operating from individual PBS Stations and State Departments of Education, the Learning Link National Consortium provides databases, information resources, in-service teacher training, e-mail, and gateways to educational databases. It is targeted at educators who use TV, video, PC's, videodisc, and on-line databases as instructional tools. This system is in use in Idaho, Maryland, and the metropolitan New York area, among others.

There is also a Learning Link (Local) for the New York City area. The contact person is Ellen Chass at 212/560-6613.

NASA Spacelink

Mail Code CA20
Public Affairs Department
George C. Marshall Space
Flight Center
Huntsville, AL 35812
205/544-0038
Contact: Jeff Ehmen

This database offers easy access to current and historical information on NASA aeronautical and space research. Classroom activities incorporate information on NASA projects to teach a number of scientific principles. All data and news are updated daily. Access is free.

NSFNet

MERIT
National Science
Foundation
1075 Beal Avenue
NDSB Bldg.
Ann Arbor, MI 48109-2112
800/666-3748
Contact: Ken Horning

The National Science Foundation Network is a general purpose internet providing access to scientific computing resources data and information. It was initially organized and is partially funded by the National Science Foundation. Based on a backbone connecting supercomputer centers, NSFNet combined existing networks into an internet. NSFNet serves as the national U.S. research network by allowing access to NSF-funded computers and other scientific resources. NSFNet is managed by Merit, Inc., a consortium of eight Michigan universities in partnership with the State of Michigan, IBM, and MCI. Merit re-engineered and now manages the backbone, along with the project's partners through its strategic fund.

OERI Toll-Free Bulletin Board System

Office of Educational
Research and
Improvement
U.S. Department of
Education
Information Technology
Branch
555 New Jersey Ave., NW
Washington, DC
20208-5725
202/357-6526
Contact: Joyce Benton

The United States Department of Education maintains this toll-free bulletin board featuring e-mail and conferencing for administrators, teachers, and others involved in education. Conference areas have been established by topic area, such as math, reading, and international exchange. Educators can also download files of interest. The Department of Education maintains three other bulletin boards that are not toll-free. These bulletin boards run on Compuserve, GTE, or Alanet (American Library Association Network).

OASIS (On-line Academic Software Information System)

Educational Computing Network
Governor State University
University Park, IL 60466
708/534-0209
Contact: Adalma Stevens

OASIS is an on-line catalog of current academic software packages for higher education. This is sponsored by the Illinois Educational Consortium and access is free.

PSI-NET

Center for Teacher Education
Drake University
Des Moines, IA 50311
515/271-3912
Contact: Jack Gerlovich

PSI-NET (People Sharing Information Network) is a telecommunications network for science educators built and available through IBM. It is organized by subject area into conferences. One application of the PSI-NET system is a network started by the Council of State Science Supervisors called CSSS network. CSSS network operates out of Ames, Iowa, and links all 50 states. Six intrastate networks link with the hub in Ames, including California, North Carolina, Florida, Montana, Minnesota, and Iowa.

UNIBASE

3002 Harding Street
Regina, Saskatchewan
Canada
S4P 0Y4
306/729-9007
Contact: Leigh Calnek

UNIBASE is a dial-in system in Saskatchewan, Canada, that supports K-12 educational experiences. It provides teacher resource materials in health, special education, and science, databases of software and hardware abstracts, and current years of ERIC CIJE, and more. UNIBASE also serves as a hub for a distributed full-text document database. The articles are loaded into the "Electronic Library" and classified according to the Dewey Decimal System. Abstracts or full-text articles are available to browse or download. Access to Unibase!Library is open to anyone. UNIBASE also supports a full-conferencing system, including those that originate at other networks. The UNIBASE Distributed Course Management System, to support courses in rural areas, will be introduced in Fall 1990.

USA Today/Apple College Network

USA Today
Educational Services
1000 Wilson Blvd.
Arlington, VA 22229
703/276-5894
Contact: Matt Hickey

Through this network, schools retrieve high-quality news, information, and graphics in use by the Gannett newspapers by downloading the articles from a Macintosh bulletin board. Nearly 200 colleges and junior colleges subscribe to the network. Interns at USA Today scan the news services for articles and graphics they think might interest subscribers, and post these to the bulletin board.

BIX

One Phoenix Mill Lane
Peterborough, NH 03458
800/227-2983
Contact: Stephen Laliberte

The Byte Information Exchange is an on-line computer conferencing system that offers conferences, vendor support, access to experts, current updates on the computer industry, databases for products and systems, and public domain software. It is run in conjunction with BYTE Magazine and charges an annual or quarterly fee.

Cleveland Free-Net System

Case Western Reserve
319 Wickenden
Cleveland, OH 44106
216/368-5121
Contact: Tom Grundner

The Cleveland Free-Net System is available to Cleveland residents or users who have access to the Internet. It is maintained by Case Western University. It provides information on most aspects of community life, including government, administration, schools, medical issues, libraries, and recreation. It is an easy-to-use, menu-driven system. For example, school information and related projects can be found under a menu option entitled, "Schoolhouse".

Compuserve

5000 Arlington Center Blvd.
P.O. Box 20212
Columbus, OH 43220
800/848-8199
Contact: Vicky Young

This service provides comprehensive and varied information, such as on-line databases dealing with news, financial services, travel reservations, and forums and conferences dealing with computer and telecommunications software. Educational forums are established for a variety of educational fields, including science, math, space, astronomy, and computing. Compuserve provides access to IQuest, one of the largest databases in the world. IQuest is an information retrieval system that provides access to 800 databases, including DIALOG, ORBIT, and Grolier's Academic American Encyclopedia.

DELPHI

Three Blackstone Street
Cambridge, MA 02139
800/544-4005
Contact: Kevin Plankey

This is a multi-interest computer information service that provides e-mail, encyclopedia, news, games, travel information, etc., to its members worldwide. Users are charged a sign-up fee and hourly connect charges.

DIALOG

Dialog Information
Services, Inc.
3460 Hillview Avenue
Palo Alto, CA 94304
800/334-2564
Contact: Ann Caputo

DIALOG, with over 370 databases, bills itself as the world's largest on-line 'knowledgebank'. Some of its features include: DIALINDEX, a master index of all databases; OneSearch, enables concurrent searching of up to 20 files; First Release, provides up-to-the-minute news; and DIALORDERS, with which full-text abstracts may be ordered online. DIALOG also offers a low-cost, after-hours, alternative called Knowledge Index which provides access to some of DIALOG's more popular databases.

Dow Jones News/Retrieval

Box 300
Princeton, NJ 08540
609/452-1511
Contact: Cathy Boyle

This news retrieval service allows access to business and financial information from over 50 databases, including general news, weather, and an on-line encyclopedia.

Federalist Bulletin Board System

Political Science Dept.
Oklahoma State University
Stillwater, OK 74078
405/744-5569
Contact: Danny Adkison

The Oklahoma State University's Political Science Department, with support from the Commission on the Bicentennial of the U.S., has set up a free 24-hour bulletin board for educators and students interested in the U.S. Constitution and the Federalist papers. Essays and classroom materials devoted to constitutional issues are available for downloading. Registered users can leave messages for political science faculty and other users.

GEnie

401 N. Washington St.
Rockville, MD 20850
800/638-9636
Contact: Client Services

The GEnie (GE Network for Information Exchange) network provides hundreds of services, including conferencing, special interest groups, education round tables for the education community, and information retrieval in the finance, news, travel, shopping, reference, and entertainment areas. Computer-Assisted Learning Center (CALC) provides homework and tutoring, continuing education, self-enrichment and college-level courses for credit. Students may study toward associate or bachelor degrees, offered by Edison State College in New Jersey. Other CALC services include downloadable software libraries, quizzes, a student union 'chat', and academic and career counseling.

Legi-Slate

111 Massachusetts
Avenue, NW
Washington, DC 20001
800/877-6999
Contact: Ann Harris

Legi-Slate is The Washington Post Company's on-line service covering Congress and the Federal Register. It provides detailed information about current and past legislation in the U.S. Congress. Verbatim transcripts are available online, including selected committee hearings from both the House and the Senate, news briefings from the White House, the Pentagon, and the State, Commerce, Justice, Treasury, and Energy Departments. Speeches, press conferences, and interviews from the President, cabinet secretaries, and other administration officials are also available online, as are transcripts from television news and interview programs, including "Face the Nation", "Meet the Press", CNN's major news interviews, "This Week with David Brinkley", "Good Morning America", "Morning News", "Today", and "Worldnet". It offers a Voting Analysis Service, searchable by subject, date, bill number, and committee, and a Congressional Service that provides a subject index and the full text of all versions of every bill since 1979. Today's and yesterday's Federal Registers are also available online in full text.

Maxwell Online, Inc.

Suite 400
8000 Westpark Drive
McLean, VA 22102
800/456-7248
Contact: Mary Ann Nash

This database service is comprised of several separate operations: ORBIT Search, which contains more than 100 databases of chemistry, energy and earth science, health, safety and the environment, engineering and electronics information; BRS Information Technologies has four product lines: BRS/Search Service contains more than 150 databases, concentrating primarily on the medical field, biomedical research, social sciences, business, and engineering; BRS Colleague, designed specifically for physicians and researchers, contains over 40 databases related to the health care industry; BRS/After Dark provides reduced rates for limited database access during off hours; BRS Search is a full-text retrieval software package; and Pergaman Search Center, which focuses on patents and trademarks. An Educator Line is geared to educators in K-12 to do their own searches for research or classroom instruction.

NewsNet

945 Haverford Road
Bryn Mawr, PA 19010
800/345-1301
Contact: Customer Service

This full-text database contains business information, including over 300 industry newsletters and wire services.

PeaceNet-EcoNet-HomeoNet-ConflictNet

IGC Networks
Institute for Global Communications
3228 Sacramento Street
San Francisco, CA 94115
415/923-0900
Contact: Geoff Sears

These four networks represent the U.S. portion of the APC Network (Association for Progressive Communications), which consists of seven members worldwide, all of whom cooperate to provide services internationally. The bulletin-board style networks provide vehicles for world discussions on peace, the environment, homeopathic medicine, and conflict resolution. Users have access to e-mail, conferences, and a user directory.

Vendor-specific Commercial Networks

America Online

8619 Westwood Center
Drive
Vienna, VA 22180
800/545-5047
Contact: Danette Carroll

Previously known as Applelink Personal Edition, this on-line service provides e-mail, bulletin boards, conferences, a reference library, an encyclopedia, and guest speakers about products and home use to the Apple user community.

**ISAAC
(Information System for Advanced Academic Computing)**

Mailstop FC-06
University of Washington
Seattle, WA 98195
206/543-5604
Contact: Tracy Maury

ISAAC is funded by IBM and is run out of the University of Washington in Seattle. It provides two services. A series of databases provide IBM-specific information on hardware and software to higher education institutions. A second service is the conferencing/forum facility provided for educators to hold IBM-related discussions.

Educational Networking Projects

Apple Global Educational Network

AGE Project
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
408/974-2872
Contact: Martin Engel

Apple Global Education (AGE) Network is a project being developed by Apple Computer Research to connect the students of the world using Applelink. It supports e-mail, file transfer, libraries, and bulletin boards. AGE projects will address social issues, pollution issues, demographics, recipes, and mathematical problem solving. AGE will provide the platform for various learning resources. It will include, for example, ecology databases, polar explorers' daily logs, and Greenpeace agendas.

AT&T Learning Network

AT&T
P.O. Box 4012
Bridgewater, NJ
08807-4012
800/367-7225
Contact: Robert Brand

The AT&T Learning Network joins students who share common interests from the U.S., Canada, Australia, France, West Germany, the Netherlands, and Japan into learning circles. Students in elementary through high school classes join learning circles such as Computer Chronicles, Global Issues, Energy Works, Society Problems, Mind Works, and Places and Perspectives. AT&T provides the support, direction, and timeline for the learning circle curriculum. As of Spring 1990, there were 32 learning circles operating. The AT&T Learning Network was previously known as the Long Distance Learning Network, and prior to that, the InterCultural Learning Network.

BreadNet

Suite 600
1250 24th St., NW
Washington, DC 20037
202/466-0533
Contact: Bill Wright

Organized in 1984 by the Bread Loaf School of English at Middlebury College, this network links teachers and students in isolated areas for educational projects. During the summer months, the BreadNet staff operates out of the Bread Loaf School of English, Rural Station, Middlebury, VT 05753, 802/388-7945.

Campus 2000

British Telecom
London, England
Contact: Gordon Jones

British Telecom provides the local connections for schools to participate in e-mail, conferencing, and database searches through special learning activities. Costs are incurred for log-on time, which must occur during school hours.

Computer Pals Across The World

Box 1206
Lake Oswego, OR 97035
503/691-1689
Contact: Emily Valdez

Started in 1984, this project connects students around the world in one of the largest pen-pal activities. Basically, it is an international writing program where classes from different schools are matched, based on age and special interests. Computer Pals' main goals are to improve written communication skills, provide an opportunity for cultural exchange, motivate less-interested students, and familiarize students with the use of international telecommunications. Participants include students in grades 3 through 12, plus college students. This network will be down through the summer months and will be up and running by late August 1990.

Educational Native American Network (ENAN)

Center for Technology and Education
Student Services Center
B88
University of New Mexico
Alburqueque, NM 87131
505/277-9441
Contact: Jack Gittinger

A project of the Bureau of Indian Affairs, the University of New Mexico, and Tandy, ENAN was originally targeted for Native American Schools. With approval, others may access this network for discussions and information, to converse with Native American children (Zuni, Navajo, etc.), and for university courses offered by the University of New Mexico.

KIDSNET

Department of Physics and Astronomy
University of Pittsburgh
Pittsburgh, PA 15260
412/624-9027
Contact: Robert D. Carlitz

The KIDSNET Mailing List has been operating since May 8, 1989. Its goal is to create an international network for children and their teachers. It is open to anyone interested in education and networking topics. The mailing list includes a few hundred sites, from which information is redistributed to other sites. Members include students, teachers, school administrators, educators, scientists and sociologists from universities, programmers, hardware designers and network architects from industry, funding agencies, children, and parents.

The National Geographic Kids Network

National Geographic Society
Educational Media Division
17th and M Streets, NW
Washington, DC 20036
800/342-4660
Contact: Elizabeth Hossli

Funded by the National Science Foundation, the National Geographic Society, and the Technical Education Research Centers, Inc., The National Geographic Kids Network provides a set of prescribed materials and activities designed for classroom use. Students in schools in the U.S., Canada, and Japan share data and scientific research, pose questions, and communicate with research scientists.

NYCENet

34-65 192nd Street
Flushing, NY 11358
718/461-8756
Contact: Fred Goldberg

Bulletin boards, databases, curriculum guides, and computer conferencing are supplied by the New York City Educational Network, which is run by the New York City Board of Education. The network also supports class projects in the New York City schools.

OASIS (Overseas American Schools Information Service)

International
Telecomputing Consortium
Suite 600
1250 24th Street, NW
Washington, DC 20037
202/466-0533
Contact: Bill Wright

The International Telecomputing Consortium (ITC) is a non-profit group whose goal is to support the electronic networking needs of rural and overseas teachers. ITC has plans to implement a network called OASIS to meet this need. It is investigating low-cost methods of linking international sites, including distributed conferencing and packet radio.

Science By Mail

Museum of Science
Science Park, MA
800/729-3300
Contact: Stephen Brandt

This pen-pal project brings together scientists and thousands of 4th through 9th grade children. Three science challenges are presented to the children each year and they return their results in various forms (reports, video, audio-tapes, and drawings). Science by Modem and Science by Fax are proposed for the future.

TERC Star Schools Project

1696 Massachusetts
Avenue
Cambridge, MA 02183
617/547-0430
Contact: Cecilia Lenk

Science and math classes in grades 7 through 12 use telecommunications to undertake large, cooperative investigations/projects. Results are shared among students, professors, and scientists nationwide. Currently, 1800 students and 600 teachers participate on the network. TERC develops the curricula and assists with implementation through resource centers around the country that teach and train teachers on curriculum usage. Classes select a module and participate in a four-week project. Funding is provided through the U.S. Department of Education Star Schools program.

Appendices

Appendix A - Summary of Network Features

State	Project Name	Network Features							
		Distance Education	Public Database/ Network Access	2-way Telecomm.	Peer to Peer			Mentor	Subject Oriented
					Admin.	Educator	Student		
Alabama	none reported								
Alaska	UACN	x	x	x	x	x	x		
Arizona	AZ EdLink		x	x	x	x			
	AZ Statewide Telecommunications Network			▨ x	▨ x	▨ x			
Arkansas	none reported								
California	none reported								
Colorado	UNC Telecommunications System			x	▨ x	▨ x		x	
Connecticut	Statenet			▨ x	▨ x				
	SNET Links to Learning		x	x			x		
Delaware	statewide telecommunications network		▨ x	x	x	x			
Florida	FIRN		x	x	x	x	x		

▨ proposed

State	Project Name	Network Features							
		Distance Education	Public Database/ Network Access	2-way Telecomm.	Peer to Peer			Mentor	Subject Oriented
					Admin.	Educator	Student		
Georgia	GC EduNET			x	x	x			
	GEIS			x ▨	x ▨				
	University of Georgia College of Education Bulletin Board			x	x	x			
Hawaii	ChemNet			x		x			x
	TELEclass			x			x		x
Idaho	First Year Teacher Project			x				x	
Illionois	Distance Learning Network	x ▨		x ▨	x ▨	x ▨			
	Electronic Educational Service Centers			x	x	x			
Indiana	ESD		x ▨	x	x	x			
	IDEANet			x	x	x			
	INTELLENET			x	x	x			

▨ proposed

State	Project Name	Network Features							
		Distance Education	Public Database/ Network Access	2-way Telecomm.	Peer to Peer			Mentor	Subject Oriented
					Admin.	Educator	Student		
Iowa	ICN	x ▨		x ▨	x ▨	x ▨		x	
	ICC & EDS		x	x	x	x		x	
	Kirkwood Community College Network	x			x	x			
Kansas	UNITE			x ▨	x	x			
Kentucky	KENS			x ▨	x ▨	x ▨			
Louisiana	none reported								
Maine	Community College of Maine	x		x ▨	x ▨	x ▨			
	ME-LINK			x	x	x			
Maryland	METNET			x	x	x			
Massachusetts	SCHOLE		x	x	x	x			
	The Beginning Teacher Network			x				x	
Michigan	none reported								

▨ proposed

State	Project Name	Network Features							
		Distance Education	Public Database/ Network Access	2-way Telecomm.	Peer to Peer			Mentor	Subject Oriented
					Admin.	Educator	Student		
Minnesota	STARS			▨ x	▨ x	▨ x			
Mississippi	none reported								
Missouri	none reported								
Montana	Big Sky Telegraph		x	x	x	x			
Nebraska	statewide network		x	x	x	x			
Nevada	none reported								
New Hampshire	EDLINK			▨ x	▨ x	▨ x			
New Jersey	ETN			x	x	x			
New Mexico	Technet			x	x	x			
New York	Teacher Resource Center Electronic Network			x		x			
	TNT	x		x	x	x			
North Carolina	WCU MicroNet		x	x		x	x		
North Dakota	ND HECN	▨ x		x	x	x			
Ohio	Ohio Education Computer Network			x	x	x			

▨ proposed

State	Project Name	Network Features							
		Distance Education	Public Database/ Network Access	2-way Telecomm.	Peer to Peer			Mentor	Subject Oriented
					Admin.	Educator	Student		
Oklahoma	none reported								
Oregon	Ed-Net	▨ x		▨ x	▨ x	▨ x			
Pennsylvania	PENN*LINK			x	x	x			
Rhode Island	none reported								
South Carolina	CUFAN			x	x	x			
South Dakota	none reported								
Tennessee	none reported								
Texas	SCHOOLinc	▨ x		▨ x	▨ x	▨ x	▨ x		
	TEA-NET		▨ x	x	x	x		x	
Utah	none reported								
Vermont	none reported								
Virginia	Teacher LINK		x	x	x	x	x		
	VT-HSNet		x	x	x	x	x		

▨ proposed

State	Project Name	Network Features							
		Distance Education	Public Database/ Network Access	2-way Telecomm.	Peer to Peer			Mentor	Subject Oriented
					Admin.	Educator	Student		
Washington	none reported								
West Virginia	Administrative Network			x	x				
	WVMEN			x	x	x			
Wisconsin	none reported								
Wyoming	none reported								

proposed

Distance Education refers to the transmission of classes and lectures.

Public Database/Network Access includes the ability to access national databases and networks.

2-way Telecommunications include electronic mail, bulletin board access, teleconferencing, and access to local or statewide databases.

Peer to Peer communications are divided into three catagories: Administrative, for communication between administrative units exclusively; Educator, for communications between all educators; and student, for communications between students in different locations.

Mentor networks refer specifically to communication between first-year teachers and their professors and/or advisors.

Subject Oriented networks are those networks dedicated to a specific subject area, i.e., math or science.

Appendix B - Contact Persons

Alaska	**UACN** University of Alaska Computer Network	Tom Healy Director of Computing Center UACN 303 Tanana Drive Fairbanks, AK 99775-5180 907/474-6280
Arizona	**EdLink** Department of Education Network	John Cikelo 1900 West Thomas Avenue Phoenix, AZ 85015 602/255-5061
	Arizona Statewide Telecommunications Network	Kathryn Kilroy Arizona Department of Education 1535 West Jefferson Street Phoenix, AZ 85007 602/542-5040
Colorado	**UNC Telecommunications System**	Lynn Thompson WIDE 425 McKee Hall University of Northern Colorado Greeley, CO 80639 303/351-2217
Connecticut	**Statenet**	Daniel Colarusso Executive Director Office of Information and Technology Office of Policy and Management State of Connecticut 80 Washington Street Hartford, CT 06106 203/566-4310

Connecticut	**SNET Links to Learning**	Tom Buckley SNET 227 Church Street New Haven, CT 06506 203/771-3115
Delaware	**Statewide Telecommunications Network**	Thomas F. Brennan Director of Computing Services Department of Public Instruction Townsend Building P.O. Box 1402 Dover, DE 19903 302/736-3721
Florida	**FIRN** Florida Information Resource Network	Bill Schmid Director of FIRN Florida Educational Center Tallahassee, FL 32399 904/487-0911
Georgia	**GC EduNET** Georgia College Educator's Network	Frank Lowney System Administrator Georgia College Educator's Network School of Education Georgia College Milledgeville, GA 31061 912/453-4546
	GEIS Georgia Educational Information System	Les Bulter Assistant State Superintendent for Technology Services Georgia Department of Education 1554 East Tower Atlanta, GA 30334 404/656-2435

Georgia	**University of Georgia, College of Education Bulletin Board**	James Aberson 232 Aderhold Hall University of Georgia Athens, GA 30602 404/542-8824
Hawaii	**ChemNet**	John Southworth University of Hawaii Lab School Curriculum R and D Group College of Education University of Hawaii Honolulu, HI 96822 808/948-6871
	TELEclass The Hawaii Global TELEclass Project	John Wollstein TELEclass International 1103 9th Avenue Honolulu, HI 96816 808/733-2007
Idaho	**First Year Teacher Project**	Holly Anderson College of Education Boise State University 1910 University Drive Boise, ID 83725 208/385-3683
Illinois	**Distance Learning Network**	Steve Crady Director Distance Learning Network Illinois Central College One College Drive East Peoria, IL 61635 309/694-5231

Illinois	**Electronic Educational Service Centers**	Richard DeHart Assessment Consultant Student Assessment Section Illinois State Board of Education 100 North First Street Springfield, IL 62777-0001 217/782-4823
Indiana	**ESD** Electronic School District	Michael Halla University Computing Services 1000 East 17th Street Bloomington, IN 47405 812/855-2222
	IDEAnet	Mike Huffman Director Educational Information System State House Indianapolis, IN 46204-2798 317/232-0808
	INTELENET	Mark Commons Executive Director INTELENET Commission 17 West Market Street Indianapolis, IN 46204-2929 317/685-8990
Iowa	**Interactive Computer Conferencing and Electronic Distribution System**	William P. Callahan Associate Dean College of Education University of Northern Iowa Cedar Falls, IA 50614 319/273-2719

Iowa	**ICN** Iowa Communications Network	Tony Crandall Project Manager Hoover Building General Services Des Moines, IA 50319 515/281-3336
	Kirkwood Community College Network	Orville Thein Director Telecommunications Services Kirkwood Community College 6301 Kirkwood Blvd., SW Cedar Rapids, IA 52406 319/398-5663
Kansas	**UNITE** Unified Network for Informatics in Teacher Education	Ronald Aust Instructional Technology Center Bailey Annex University of Kansas Lawrence, KS 66045 913/864-3057
Kentucky	**KENS** Kentucky Educational Networking System	H. M. Snodgrass Associate Superintendent for Research and Planning Capitol Plaza Tower Frankfort, KY 40601 502/564-6900
Maine	**ME-LINK**	Cathy Glaude Maine Computer Consortium P.O. Box 620 Auburn, ME 04212 207/783-0833

Maine	**The Community College of Maine**	Pamela S. MacBrayne Executive Director of Distance Education University of Maine at Augusta Augusta, ME 04330 207/622-7131
Maryland	**METNET**	Patricia Mullinex Maryland Instructional Technologies 11767 Bonita Avenue Owings Mills, MD 21117 301/581-4350
Massachusetts	**The Beginning Teacher Computer Network**	Diane Beals Harvard University Graduate School of Education 224 Longfellow Hall Appian Way Cambridge, MA 02138 617/495-3498
	SCHOLE Boston University School of Education	Gerald S. Fain Director Boston University School of Education Schole Office 605 Commonwealth Avenue Boston, MA 02215 617/353-3295

Minnesota	**STARS** Statewide Telecommunications Access and Routing System	Bob Fischer STARS Division Director State of Minnesota Department of Administration InterTechnologies Group 500 Centennial Office Building 658 Cedar Street St. Paul, MN 55155 612/296-6428
Montana	**Big Sky Telegraph**	Frank Odasz Big Sky Telegraph Western Montana College Dillon, Montana 59725 406/683-7338
Nebraska	**Statewide Network**	Wayne Fisher Technical Coordinator NDE Technology Center 301 Centennial Mall South Lincoln, NE 68509-4987 402/471-2918
New Hampshire	**EDLINK**	Larry Vaughn Executive Director Governor's Initiative Office 36 South Road Londonderry, NH 03053 603/432-6779
New Jersey	**ETN** Education Technology Network	Theodore Smorodin Educational Technology Specialist New Jersey State Department of Education 225 West State Street Trenton, NJ 08625-0500 609/984-1905

New Mexico	**Technet**	Art St. George 2701 Campus Blvd., NE Albuquerque, NM 87131 505/277-8046
New York	**Teacher Resource Centers' Electronic Network**	Helen Hartle Office of Staff Development New York State Education Department Room 9D 58 CEC Empire State Plaza Albany, NY 12230 518/473-1234
	TNT Technology Network Ties	Michael S. Radlick Director New York State Education Department Office of Elementary and Secondary Educational Planning Testing and Technology Services Room 867 Albany, NY 12234 518/473-9106
North Carolina	**WCU MicroNet** Western Carolina University MicroNet	Lewis Sutton WCU MicroNet NS 316 Western Carolina University Cullowhee, NC 28723 704/227-7633
North Dakota	**ND HECN** North Dakota Higher Education Computer Network	Dale Vetter Director of Computing Center University of North Dakota P.O. Box 8218 Grand Forks, ND 58202 701/777-3789

Ohio	**Ohio Education Computer Network**	Jim Daubenmire Assistant Director Ohio Department of Education Division of Computer Services 180 E. Engler Street Columbus, OH 43266-0552 614/466-7000
Oregon	**Ed-Net** Integrated Statewide Telecommunications Network	Dave Tilden Office of Educational Policy and Planning 225 Winter Street, NE Salem, OR 97310 503/378-3921
Pennsylvania	**PENN*LINK** Department of Education Computer Network	Ann Witmer Pennsylvania Department of Education 333 Market Street Harrisburg, PA 17126-0333 717/787-2644
South Carolina	**CUFAN** Clemson's Forestry and Agriculture Network	Jerry R. Lambert McAdams Hall Clemson University Clemson, SC 29634 803/656-4063
Texas	**SchooLINC** School Interactive Network Consortium	Linda Lloyd Texas Association of School Boards P.O. Box 2947 Austin, TX 78768 512/467-0222

Texas	**TEA-NET** Texas Education Agency Network	Connie Stout Division of Educational Technology Texas Education Agency 1701 North Congress Avenue Austin, TX 78701 512/463-9087
Virginia	**Teacher LINK**	Judi Harris Curry School of Education University of Virginia 405 Emmet Street Charlottesville, VA 22903 804/924-7471
	VT-HSNet Virginia Tech K-12 Computer Network Project	Phillip Bowden Communications Resources Virginia Tech Blacksburg, VA 24061 703/231-6460
West Virginia	**WV Administrative Network**	John McClure State Computer Network Coordinator West Virginia Department of Education Capitol Complex 1900 Kanwha East Charleston, WV 25305 304/348-2691

West Virginia	**WVMEN** West Virginia Microcomputer Educational Network	Brenda Williams State Computer Network Cordinator West Virginia Department of Education Capitol Complex 1900 Kanwha East Charleston, WV 25305 304/348-7880

Appendix C - Major References

Our research into current information about telecommunications networks and education uncovered over 150 journal articles, books, and other publications. Several of these references are exceptional in terms of their comprehensive and current information about networks and/or education and are recommended for further reading.

!%@:: A Directory of Electronic Mail

Frey, Donnalyn and Rick Adams, August 1989.

Published by O'Reilly & Associates, Inc.,
632 Petaluma Avenue, Sebastopol, CA 95472.

This handbook of e-mail addressing and networks contains descriptions of 103 major e-mail networks worldwide. Addressing, architecture, future plans, and a geographic map are included with each network description. An introduction to e-mail is also included.

The Electronic School: Innovative Uses of Technology in Education

Sponsored by the National School Boards Association's Institute for the Transfer of Technology to Education, September 1989.

This publication is a series of articles that discusses distance learning via satellite, computer networks, and interactive video, and describes the implementation of this technology in schools.

Linking for Learning

U.S. Congress, Office of Technology Assessment, OTA-SET-430, Washington, DC: U.S. Government Printing Office, November 1989.

This resource documents distance education activities in today's classrooms. State-by-state profiles, and federal and state involvement in distance education are included.

The Matrix. Computer Networks and Conferencing Systems Worldwide

Quarterman, John S. 1990.

Digital Press, 12 Crosby Drive, Bedford, MA 01730.

An introduction and reference to worldwide data communications networks, this book is a comprehensive resource of international, national, regional, academic, and corporate networks and includes sections which discuss network, layer, and management protocols.

Power On! New Tools for Teaching and Learning

U.S. Congress, Office of Technology Assessment, OTA-SET-379, Washington DC: U.S. Government Printing Office, September 1988.

The report examines developments in the use of computer-based technologies, analyzes key trends in hardware and software development, evaluates the capability of technology to improve learning in many areas, and explores ways to substantially increase student access to technology. The role of the teacher, teacher training needs, and the impact of federal support for educational technology research and development are also reviewed.

Telecommunications in the Classroom

Clark, Chris, Barbara Kurshan, and Sharon Yoder, 1989.

Co-published by Computer Learning Foundation, P.O. Box 60007, Palo Alto, CA 94306-0007, and International Society for Technology in Education (ISTE), University of Oregon, 1787 Agate Street, Eugene, OR 97403.

The bulk of this telecommunications guide for educators is devoted to lesson plans from the Teacher Telecommunications Lesson Plans Contest. A listing of educational computer services, electronic networks and exploratory projects, as well as a history of telecommunications and system terminology, are also included.

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